

CLAIMS

1. An isolated polynucleotide which encodes a protein comprising the amino acid sequence of SEQ ID NO:2.
2. The isolated polynucleotide of Claim 1, wherein said protein has the activity of the  $\beta$ -subunit of RNA polymerase B.
3. An isolated polynucleotide which comprises SEQ ID NO:1.
4. An isolated polynucleotide which is complimentary to the polynucleotide of Claim 3.
5. An isolated polynucleotide which is at least 70% identical to the polynucleotide of Claim 3.
6. An isolated polynucleotide which is at least 80% identical to the polynucleotide of Claim 3.
7. An isolated polynucleotide which is at least 90% identical to the polynucleotide of Claim 3.
8. An isolated polynucleotide which hybridizes under stringent conditions to the polynucleotide of Claim 3; wherein said stringent conditions comprise washing in 5X SSC at a temperature from 50 to 68°C.
9. The isolated polynucleotide of Claim 3, which encodes a protein having the activity of the  $\beta$ -subunit of RNA polymerase B.
10. An isolated polynucleotide which comprises at least 15 consecutive nucleotides of the polynucleotide of Claim 3.
11. An isolated polypeptide which comprises the amino acid sequence of SEQ ID NO:2.
12. An isolated polypeptide which comprises the amino acid sequence of SEQ ID NO:4.

13. An isolated polypeptide which comprises the amino acid sequence of SEQ ID NO:6.
14. An isolated polynucleotide which encodes a protein comprising the amino acid sequence of SEQ ID NO:4.
- 5 15. An isolated polynucleotide which comprises SEQ ID NO:3.
16. An isolated polynucleotide which encodes a protein comprising the amino acid sequence of SEQ ID NO:6.
- 10 17. An isolated polynucleotide which comprises SEQ ID NO:5.
18. A vector comprising the isolated polynucleotide of Claim 1.
19. A vector comprising the isolated polynucleotide of Claim 3.
- 15 20. A vector comprising the isolated polynucleotide of Claim 14.
21. A vector comprising the isolated polynucleotide of Claim 15.
22. A vector comprising the isolated polynucleotide of Claim 16.
- 20 23. A vector comprising the isolated polynucleotide of Claim 17.
24. A host cell comprising the isolated polynucleotide of Claim 1.
- 25 25. A host cell comprising the isolated polynucleotide of Claim 3.
26. A host cell comprising the isolated polynucleotide of Claim 14.

27. A host cell comprising the isolated polynucleotide of Claim 15.

28. A host cell comprising the isolated polynucleotide of Claim 16.

5 29. A host cell comprising the isolated polynucleotide of  
Claim 17.

30. The host cell of Claim 24, which is a *Coryneform* bacterium.

31. The host cell of Claim 25, which is a *Coryneform*  
10 bacterium.

32. The host cell of Claim 26, which is a *Coryneform* bacterium.

33. The host cell of Claim 27, which is a *Coryneform* bacterium.

15 34. The host cell of Claim 28, which is a *Coryneform*  
bacterium.

35. The host cell of Claim 29, which is a *Coryneform* bacterium.

36. The host cell of Claim 24, wherein said host cell is  
20 selected from the group consisting of *Coryneform*  
*glutamicum*, *Corynebacterium acetoglutamicum*,  
*Corynebacterium acetoacidophilum*, *Corynebacterium*  
*thermoaminogenes*, *Corynebacterium melassecola*,  
*Brevibacterium flavum*, *Brevibacterium lactofermentum*,  
25 and *Brevibacterium divaricatum*.

37. The host cell of Claim 24, wherein said host cell is selected from the group consisting of *Corynebacterium glutamicum* FERM 1709, *Brevibacterium flavum* FERM-P 1708, *Brevibacterium lactofermentum* FERM-P1712, *Corynebacterium glutamicum* FERM-P6463, *Corynebacterium*

glutamicum FERM-P6464, *Corynebacterium glutamicum* DM58-1, *Corynebacterium glutamicum* DG 52-5, *Corynebacterium glutamicum* DSM 5714 and *Corynebacterium glutamicum* DSM-12866.

- 5 38. The host cell of Claim 25, wherein said host cell is selected from the group consisting of *Coryneform glutamicum*, *Corynebacterium acetoglutamicum*, *Corynebacterium acetoacidophilum*, *Corynebacterium thermoaminogenes*, *Corynebacterium melassecola*,  
10 *Brevibacterium flavum*, *Brevibacterium lactofermentum*, and *Brevibacterium divaricatum*.
- 15 39. The host cell of Claim 25, wherein said host cell is selected from the group consisting of *Corynebacterium glutamicum* FERM 1709, *Brevibacterium flavum* FERM-P 1708, *Brevibacterium.lactofermentum* FERM-P1712, *Corynebacterium glutamicum* FERM-P6463, *Corynebacterium glutamicum* FERM-P6464, *Corynebacterium glutamicum* DM58-1, *Corynebacterium glutamicum* DG 52-5, *Corynebacterium glutamicum* DSM 5714 and *Corynebacterium glutamicum* DSM-  
20 12866.
40. A *Coryneform* bacterium which comprises an enhanced *rpoB* gene.
- 25 41. The *Coryneform* bacterium of Claim 40, wherein said *rpoB* gene comprises the polynucleotide sequence of SEQ ID NO:1.
42. The *Coryneform* bacterium of Claim 40, wherein said enhanced *rpoB* gene comprises the polynucleotide sequence of SEQ ID NO:3.
- 30 43. The *Coryneform* bacterium of Claim 40, wherein said enhanced *rpoB* gene comprises the polynucleotide sequence of SEQ ID NO:5.
44. *Coryneform glutamicum* DSM 13993.

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45. *Coryneform glutamicum* DSM 13994.

46. A process for producing L-amino acids comprising culturing the host cell of Claim 24 in a medium suitable for the expression of the polynucleotide; and collecting  
5 the L-amino acid.

47. The process of Claim 46, wherein said L-amino acid is L-lysine or L-glutamate.

48. The process of Claim 46, wherein said L-amino acid is L-lysine and the host cell further comprises at least  
10 one gene whose expression is enhanced, wherein said gene is selected from the group consisting of dapA, gap, tpi, pgk, zwf, pyc, mqo, lys C, lys E, zwal and rpsL.

49. The process of Claim 46, wherein the host cell further comprises at least one gene whose expression is  
15 attenuated, wherein said gene is selected from the group consisting of pck gene, pgi gene, poxB, and zwa2.

50. A process for producing L-amino acids comprising culturing the host cell of Claim 25 in a medium suitable for the expression of the polynucleotide; and collecting  
20 the L-amino acid.

51. The process of Claim 50, wherein said L-amino acid is L-lysine or L-glutamate.

52. The process of Claim 50, wherein wherein said L-amino acid is L-lysine and the host cell further comprises at  
25 least one gene whose expression is enhanced, wherein said gene is selected from the group consisting of dapA, gap, tpi, pgk, zwf, pyc, mqo, lys C, lys E, zwal and rpsL.

53. The process of Claim 50, wherein the host cell further comprises at least one gene whose expression is  
30 attenuated, wherein said gene is selected from the group consisting of pck gene, pgi gene, poxB, and zwa2.

54. A process for producing L-amino acids comprising culturing the host cell of Claim 26 in a medium suitable for the expression of the polynucleotide; and collecting the L-amino acid.
- 5 55. The process of Claim 54, wherein said L-amino acid is L-lysine or L-glutamate.
56. The process of Claim 54, wherein wherein said L-amino acid is L-lysine and the host cell further comprises at least one gene whose expression is enhanced, wherein  
10 said gene is selected from the group consisting of dapA, gap, tpi, pgk, zwf, pyc, mqo, lys C, lys E, zwa1 and rpsL.
57. The process of Claim 54, wherein the host cell further comprises at least one gene whose expression is  
15 attenuated, wherein said gene is selected from the group consisting of pck gene, pgi gene, poxB, and zwa2.
58. A process for producing L-amino acids comprising culturing the host cell of Claim 26 in a medium suitable for the expression of the polynucleotide; and collecting  
20 the L-amino acid.
59. The process of Claim 58, wherein said L-amino acid is L-lysine or L-glutamate.
60. The process of Claim 58, wherein wherein said L-amino acid is L-lysine and the host cell further comprises at least one gene whose expression is enhanced, wherein  
25 said gene is selected from the group consisting of dapA, gap, tpi, pgk, zwf, pyc, mqo, lys C, lys E, zwa1 and rpsL.
61. The process of Claim 58, wherein the host cell further comprises at least one gene whose expression is  
30 attenuated, wherein said gene is selected from the group consisting of pck gene, pgi gene, poxB, and zwa2.

62. A process for producing L-amino acids comprising culturing the host cell of Claim 27 in a medium suitable for the expression of the polynucleotide; and collecting the L-amino acid.
- 5 63. The process of Claim 62, wherein said L-amino acid is L-lysine or L-glutamate.
64. The process of Claim 62, wherein wherein said L-amino acid is L-lysine and the host cell further comprises at least one gene whose expression is enhanced, wherein  
10 said gene is selected from the group consisting of dapA, gap, tpi, pgk, zwf, pyc, mqo, lys C, lys E, zwal and rpsL.
65. The process of Claim 62, wherein the host cell further comprises at least one gene whose expression is  
15 attenuated, wherein said gene is selected from the group consisting of pck gene, pgi gene, poxB, and zwa2.
66. A process for producing L-amino acids comprising culturing the host cell of Claim 28 in a medium suitable for the expression of the polynucleotide; and collecting  
20 the L-amino acid.
67. The process of Claim 66, wherein said L-amino acid is L-lysine or L-glutamate.
68. The process of Claim 66, wherein wherein said L-amino acid is L-lysine and the host cell further comprises at least one gene whose expression is enhanced, wherein  
25 said gene is selected from the group consisting of dapA, gap, tpi, pgk, zwf, pyc, mqo, lys C, lys E, zwal and rpsL.
69. The process of Claim 66, wherein the host cell further  
30 comprises at least one gene whose expression is attenuated, wherein said gene is selected from the group consisting of pck gene, pgi gene, poxB, and zwa2.

70. A process for producing L-amino acids comprising culturing the host cell of Claim 29 in a medium suitable for the expression of the polynucleotide; and collecting the L-amino acid.
- 5 71. The process of Claim 70, wherein said L-amino acid is L-lysine or L-glutamate.
72. The process of Claim 70, wherein wherein said L-amino acid is L-lysine and the host cell further comprises at least one gene whose expression is enhanced, wherein  
10 said gene is selected from the group consisting of dapA, gap, tpi, pgk, zwf, pyc, mqo, lys C, lys E, zwal and rpsL.
73. The process of Claim 70, wherein the host cell further comprises at least one gene whose expression is  
15 attenuated, wherein said gene is selected from the group consisting of pck gene, pgi gene, poxB, and zwa2.
74. A process for screening for polynucleotides which encode a protein having the activity of the  $\beta$ -subunit of RNA polymerase B comprising hybridizing the isolated  
20 polynucleotide of Claim 1 to the polynucleotide to be screened; expressing the polynucleotide to produce a protein; and detecting the presence or absence of the activity of the  $\beta$ -subunit of RNA polymerase B in said protein.
- 25 75. A process for screening for polynucleotides which encode a protein having the activity of the  $\beta$ -subunit of RNA polymerase B comprising hybridizing the isolated polynucleotide of Claim 3 to the polynucleotide to be  
30 screened; expressing the polynucleotide to produce a protein; and detecting the presence or absence of the activity of the  $\beta$ -subunit of RNA polymerase B in said protein.
76. A process for screening for polynucleotides which



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5 encode a protein having the activity of the  $\beta$ -subunit of RNA polymerase B comprising hybridizing the isolated polynucleotide of Claim 15 to the polynucleotide to be screened; expressing the polynucleotide to produce a protein; and detecting the presence or absence the activity of the  $\beta$ -subunit of RNA polymerase B in said protein.

10 77. A process for screening for polynucleotides which encode a protein having the activity of the  $\beta$ -subunit of RNA polymerase B comprising hybridizing the isolated polynucleotide of Claim 17 to the polynucleotide to be screened; expressing the polynucleotide to produce a protein; and detecting the presence or absence the activity of the  $\beta$ -subunit of RNA polymerase B in said protein.

15 78. A method for detecting a nucleic acid with at least 70% homology to nucleotide of Claim 1, comprising contacting a nucleic acid sample with a probe or primer comprising at least 15 consecutive nucleotides of the nucleotide sequence of Claim 1, or at least 15 consecutive nucleotides of the complement thereof.

20 79. A method for producing a nucleic acid with at least 70% homology to nucleotide of Claim 1, comprising contacting a nucleic acid sample with a primer comprising at least 15 consecutive nucleotides of the nucleotide sequence of Claim 1, or at least 15 consecutive nucleotides of the complement thereof.

30 80. A method for detecting a nucleic acid with at least 70% homology to nucleotide of Claim 3, comprising contacting a nucleic acid sample with a probe or primer comprising at least 15 consecutive nucleotides of the nucleotide sequence of Claim 3, or at least 15 consecutive nucleotides of the complement thereof.

81. A method for producing a nucleic acid with at least

70% homology to nucleotide of Claim 3, comprising contacting a nucleic acid sample with a primer comprising at least 15 consecutive nucleotides of the nucleotide sequence of Claim 3, or at least 15 consecutive nucleotides of the complement thereof.

82. A method for making a  $\beta$ -subunit of RNA polymerase B, comprising: culturing the host cell of Claim 23 for a time and under conditions suitable for expression of the  $\beta$ -subunit of RNA polymerase B, and collecting the  $\beta$ -subunit of RNA polymerase B.

83. A method for making a  $\beta$ -subunit of RNA polymerase B, comprising: culturing the host cell of Claim 24 for a time and under conditions suitable for expression of the  $\beta$ -subunit of RNA polymerase B, and collecting the  $\beta$ -subunit of RNA polymerase B.

84. A method for making a  $\beta$ -subunit of RNA polymerase B, comprising: culturing the host cell of Claim 25 for a time and under conditions suitable for expression of the  $\beta$ -subunit of RNA polymerase B, and collecting the  $\beta$ -subunit of RNA polymerase B.

85. A method for making a  $\beta$ -subunit of RNA polymerase B, comprising: culturing the host cell of Claim 26 for a time and under conditions suitable for expression of the  $\beta$ -subunit of RNA polymerase B, and collecting the  $\beta$ -subunit of RNA polymerase B.

86. A method for making a  $\beta$ -subunit of RNA polymerase B, comprising: culturing the host cell of Claim 27 for a time and under conditions suitable for expression of the  $\beta$ -subunit of RNA polymerase B, and collecting the  $\beta$ -subunit of RNA polymerase B.

87. A method for making a  $\beta$ -subunit of RNA polymerase B, comprising: culturing the host cell of Claim 28 for a time and under conditions suitable for expression of

the  $\beta$ -subunit of RNA polymerase B, and collecting the  $\beta$ -subunit of RNA polymerase B.

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